Graphic Organizers and Thinking Maps
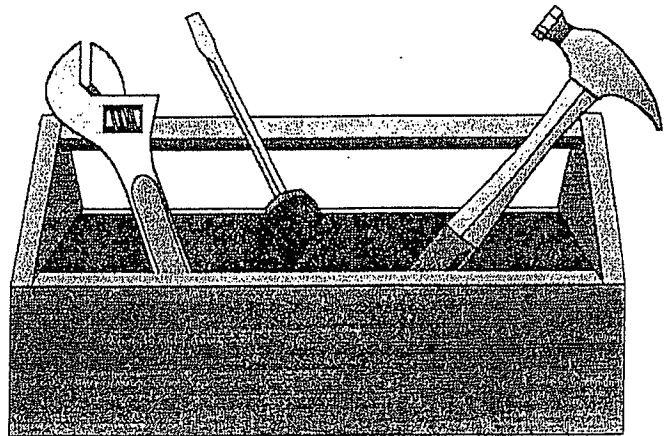
For Acquiring and Extending Learning
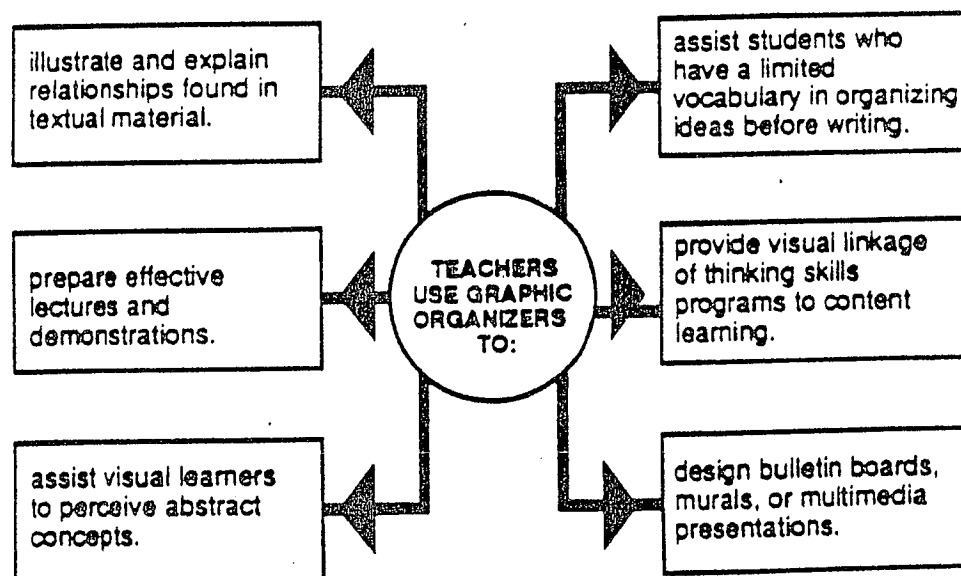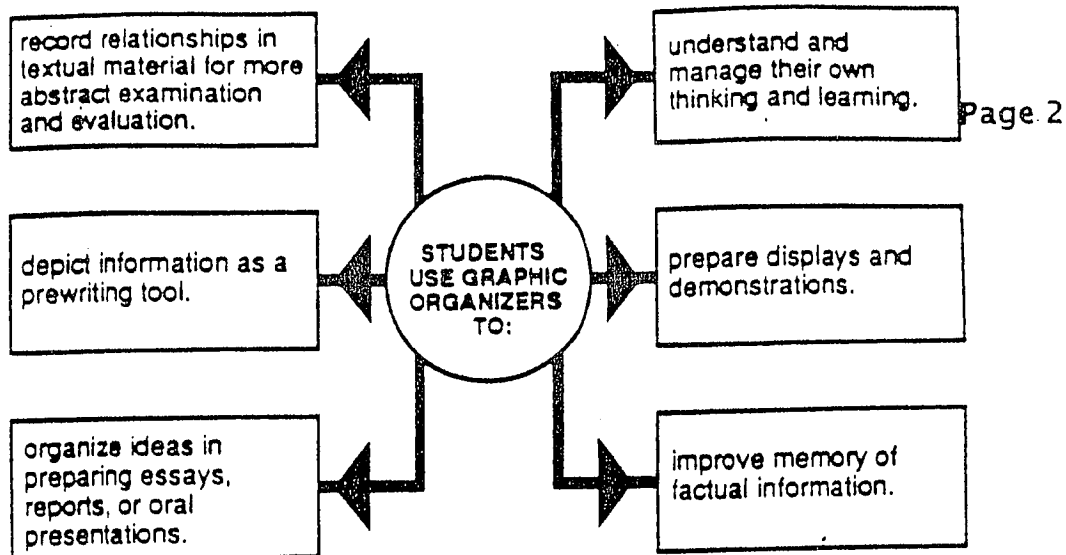
Graphic Organizers

1. Tools students and teachers use to establish organization patterns for their thinking, writing, discussions, and reporting.

2. They provide the structure for recording information, ideas, or options.

3. Graphic Organizers make the content visual to the learners.

4. The use of graphic organizers links higher order thinking skills and textbook organization to many uses by the learner.

   Textbooks organized by:
   - Sequence or Time
   - Listing
   - Compare/Contrast
   - Cause/Effect
   - Problem/solution

   Therefore, **use organizers that follow text organization**

5. *Average student studying with the aid of organizers learns as much as the 90th percentile student studying the same content without the assistance of organizers.* The use of organizers produces learning effects that are substantial and long-lasting.

6. Five most common uses for Graphic Organizers

   √ Structured Note-Taking
   √ Guided writing assignments for summarizing/reporting
   √ Guided reading assignments
   √ Overview of chapter/unit
   √ Visual description across assignments

record relationships in textual material for more abstract examination and evaluation.

understand and manage their own thinking and learning.

STUDENTS USE GRAPHIC ORGANIZERS TO:

depict information as a prewriting tool.

prepare displays and demonstrations.

organize ideas in preparing essays, reports, or oral presentations.

improve memory of factual information.

illustrate and explain relationships found in textual material.

assist students who have a limited vocabulary in organizing ideas before writing.

TEACHERS USE GRAPHIC ORGANIZERS TO:

prepare effective lectures and demonstrations.

provide visual linkage of thinking skills programs to content learning.

assist visual learners to perceive abstract concepts.

design bulletin boards, murals, or multimedia presentations.

These graphic organizers depict key skills (compare and contrast, sequence, part/whole relationships, classification, and analogy) and involve students in active thinking about textual information to promote clearer understanding of content lessons. Diagrams serve as "mental maps" to depict complex relationships in any subject and at any grade level. Thus, graphic organizers become a metacognitive tool to transfer the thinking processes to other lessons which feature the same relationships.

The use of graphic organizers encourages students to see information as components of systems or as contrasting concepts, rather than as isolated facts. Once information and relationships have been recorded on graphic organizers, students then use the pictorial outline to form more abstract comparisons, evaluations, and conclusions. These "diagrammatic outlines" help students organize their thinking for writing, for oral or visual presentations, and for problem solving.

Ideas for using graphic organizers include the following:

1. Include graphic organizers on quizzes and tests.
2. Require groups to complete an assigned graphic organizer and topic on newsprint. Give group grade for final graphic organizer and oral presentation.
3. Assign students to select one graphic organizer to use to analyze a lecture, video, book, piece of fiction, piece of non-fiction, speech, news story, or textbook reading. Grade the assignment on accuracy, originality, and creativity.
4. Allow the students to select one or two graphic organizer assignments from their work to include in the portfolio.
5. Assign students work that requires a graphic organizer to be completed by a cooperative group. Ask each student in the group to complete an individual writing or speaking assignment based on the ideas included in the graphic organizer. Give a group grade and an individual grade.
6. Ask the students or the cooperative group to invent an original graphic organizer. Grade the assignment on the basis of originality, creativity, usefulness, and logic.
7. Require students to utilize a graphic organizer in a project or oral presentation. Grade the quality and effectiveness of the original organizer.
8. Create a picture graphic organizer that includes outlines of objects rather than circles or lines.

PAUSE

II

Including graphic organizers on tests would be more creative, challenging, and fun than most traditional objective-style items.
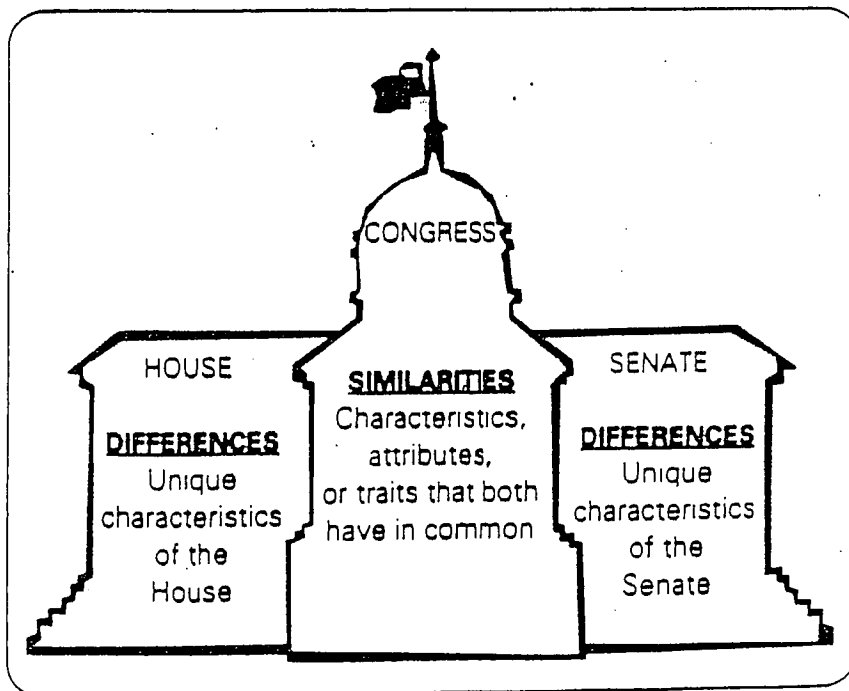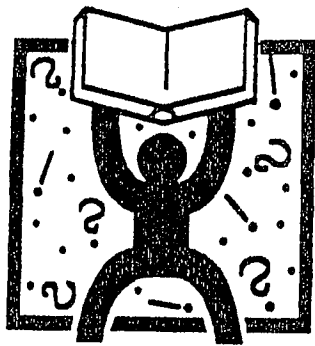
KEY POINTS

* Graphic organizers help students remember because they become "blueprints" or maps that make abstract ideas more visible and concrete

* Graphic organizers can help bridge the connection between prior knowledge, what the student is doing today, and what they can apply and transfer to other things

* Graphic organizers....can help students locate, select, sequence, integrate, and restructure information - from the perspective of understanding and producing information in written responses

* Graphic organizers are often used in the learning process during formative stages of assessment - graphic organizers can and should be used for other assessments or evaluation

Including graphic organizers on tests would be more fun and challenging than most traditional objective - style items.
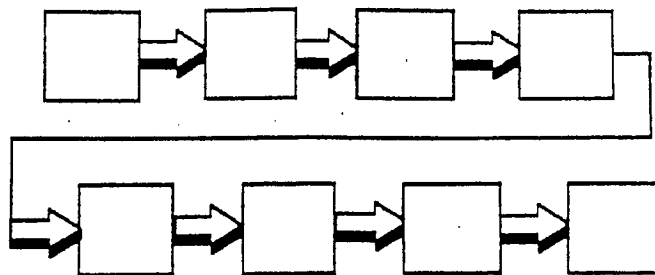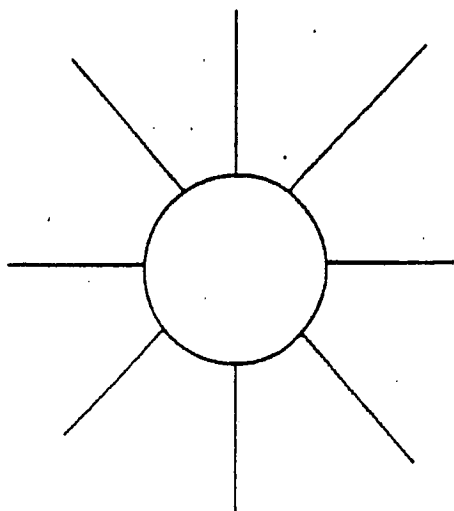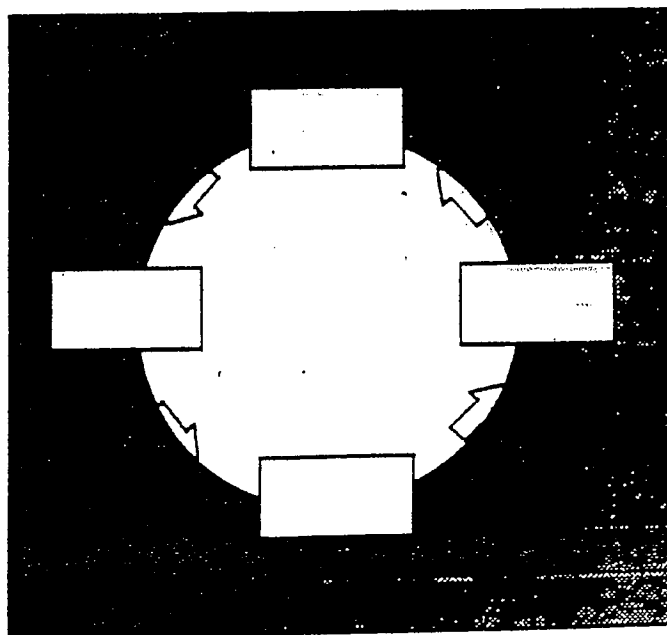
PREDICTION TREE MODEL
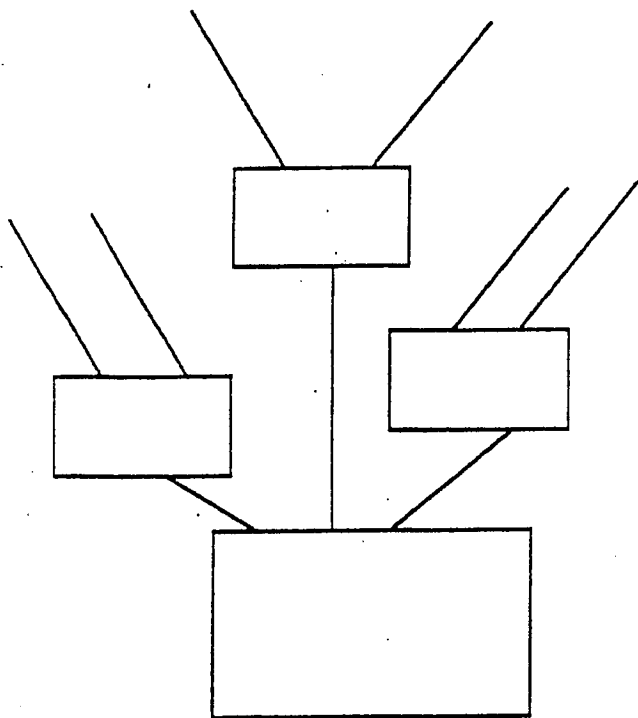
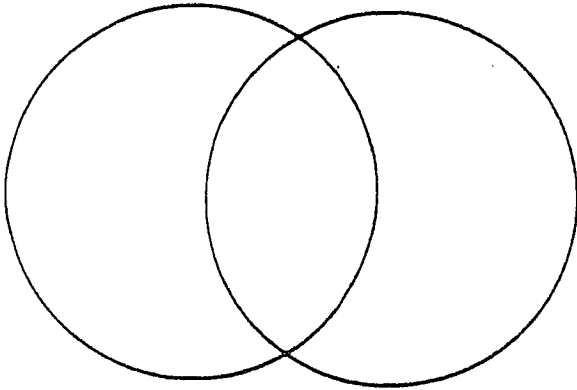## THE SEQUENCE CHART
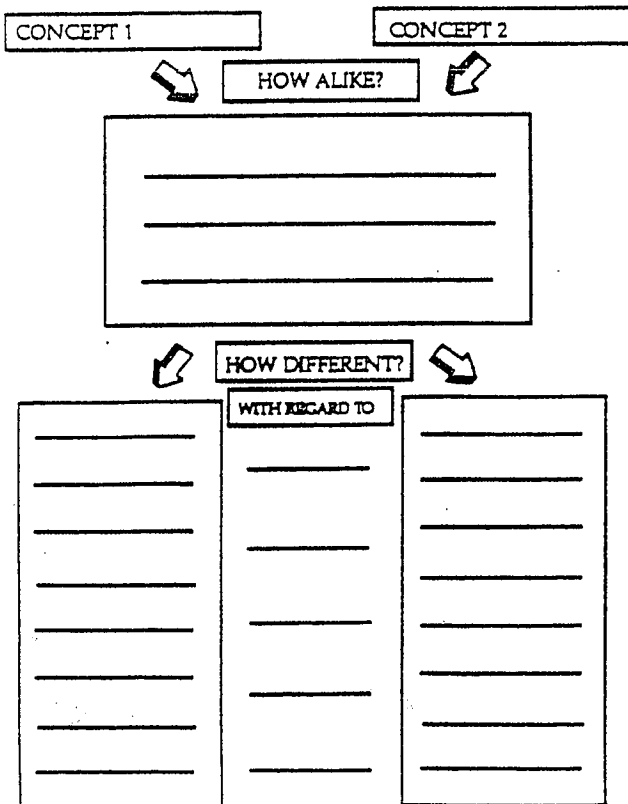
Problem:

COGNITIVE WEB

CYCLE GRAPH

VENN DIAGRAM

DESCRIBING A HISTORICAL EVENT

WHO?

WHY?

WHEN?

EVENT

HOW?

WHERE?

SIGNIFICANCE?
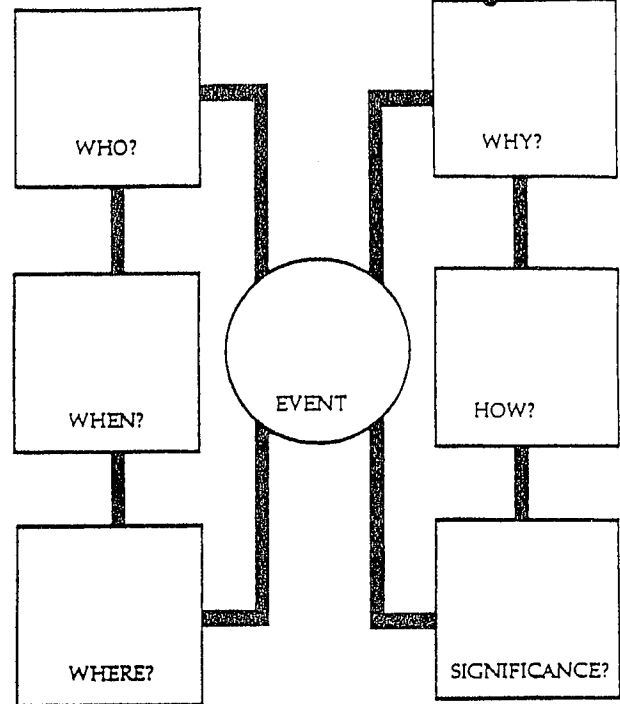
COMPARE/CONTRAST DIAGRAM

CONCEPT 1

CONCEPT 2

HOW ALIKE?

HOW DIFFERENT?

WITH REGARD TO

FISHBONE (ISHIKAWA)

cause/effect
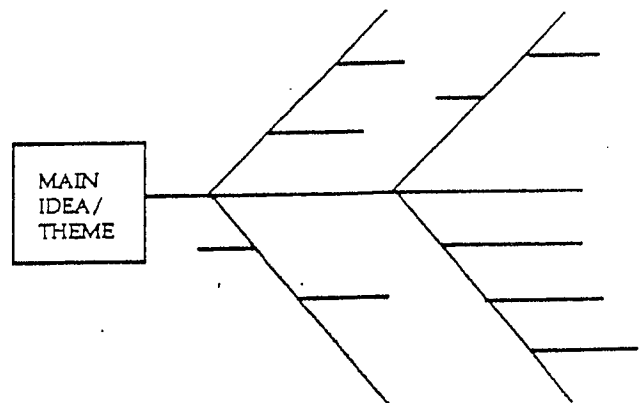
MAIN
IDEA/
THEME

DETAILS

```
┌─────────────────────────┐
│                         │
└─────────────────────────┘

┌─────────────────────────┐
│                         │
└─────────────────────────┘

┌─────────────────────────┐
│                         │
└─────────────────────────┘

┌─────────────────────────┐
│                         │
└─────────────────────────┘
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+

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┌─────────────────────────┐
│                         │
└─────────────────────────┘
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━━━━━━━━━━━━━━━━━━━━━━━━━━

MAIN IDEA
```
┌─────────────────────────┐
│ _____ │
│ _____ │
│ _____ │
│ _____ │
└─────────────────────────┘
```

STORY MAP

Title: _____

Setting: _____ Page 7

Problem: _____

Event 1 _____
Event 2 _____
Event 3 _____
Event 4 _____
Event 5 _____

Solution: _____

Characters: _____ _____
            _____ _____
            _____ _____

STORY MAP

Title: _____

Setting: _____

Problem: _____

Difficulty #1 _____

Difficulty #2 _____

Difficulty #3 _____

Difficulty #4 _____

Most important
Climax (Difficulty) _____

Resolution: _____

Protagonist _____

Antagonist _____

x = Difficulty or obstacle

Protagonist → Conflict ... Climax ... Resolution

DESCRIBING A HISTORICAL EVENT
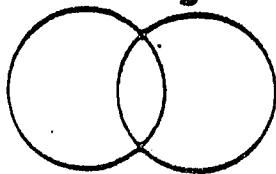

WHO   WHY
WHEN   EVENT   HOW
WHERE SIGNIFICANCE
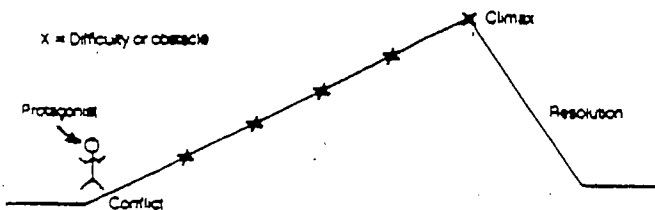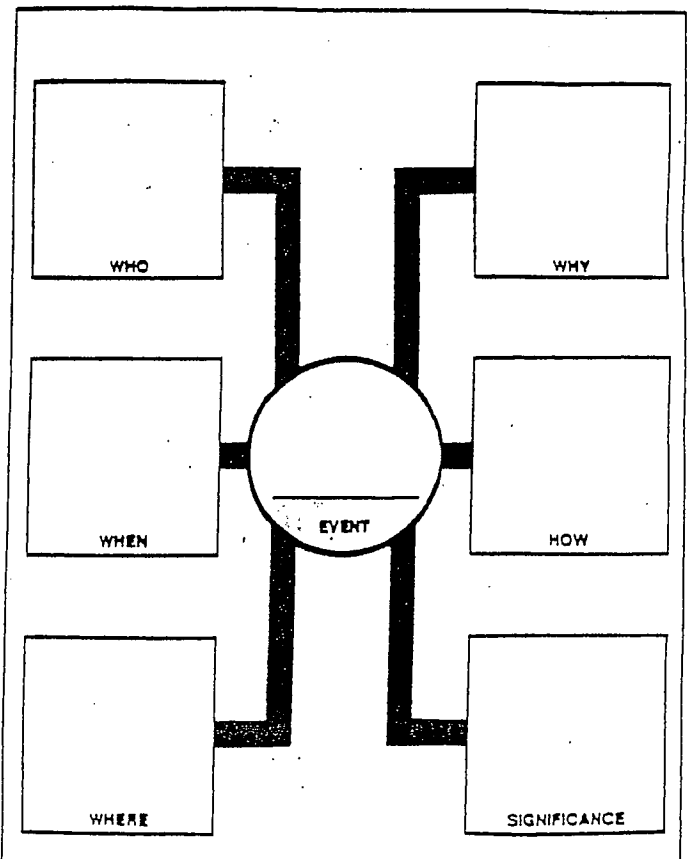
Cognitive Organizers'
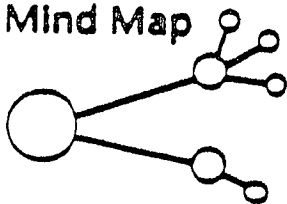
Venn Diagram

Thinking Skill: Comparing & Contrasting

Matrix   Page 8

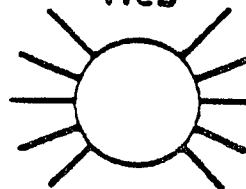Thinking Skill: Classifying

Mind Map

Thinking Skill: Brainstorming

Web

Thinking Skill: Analyzing Attributes

Questions

FAT?	SKINNY?
1	1
2	2
3	3

Thinking Skill: Hypothesizing

Ranking

1 _____
2 _____
3 _____

Thinking Skill: Prioritizing

T-Chart

Looks Like	Sounds Like

Thinking Skill: Visualizing

P.M.I.

P+	
M-	
I?	

Thinking Skill: Evaluating

Thinking at Right Angles

A _____

B _____
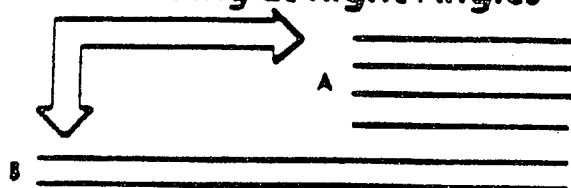
Thinking Skill: Associating Ideas

Bridging Snapshots
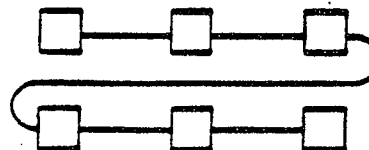
Thinking Skill: Sequencing

Fish Bone
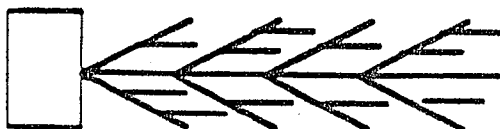
Thinking Skill: Analyzing

KWL

What we know	What we want to find out	What we learn

Thinking Skill: Predicting/Evaluating

THE FISH BONE

EFFECT
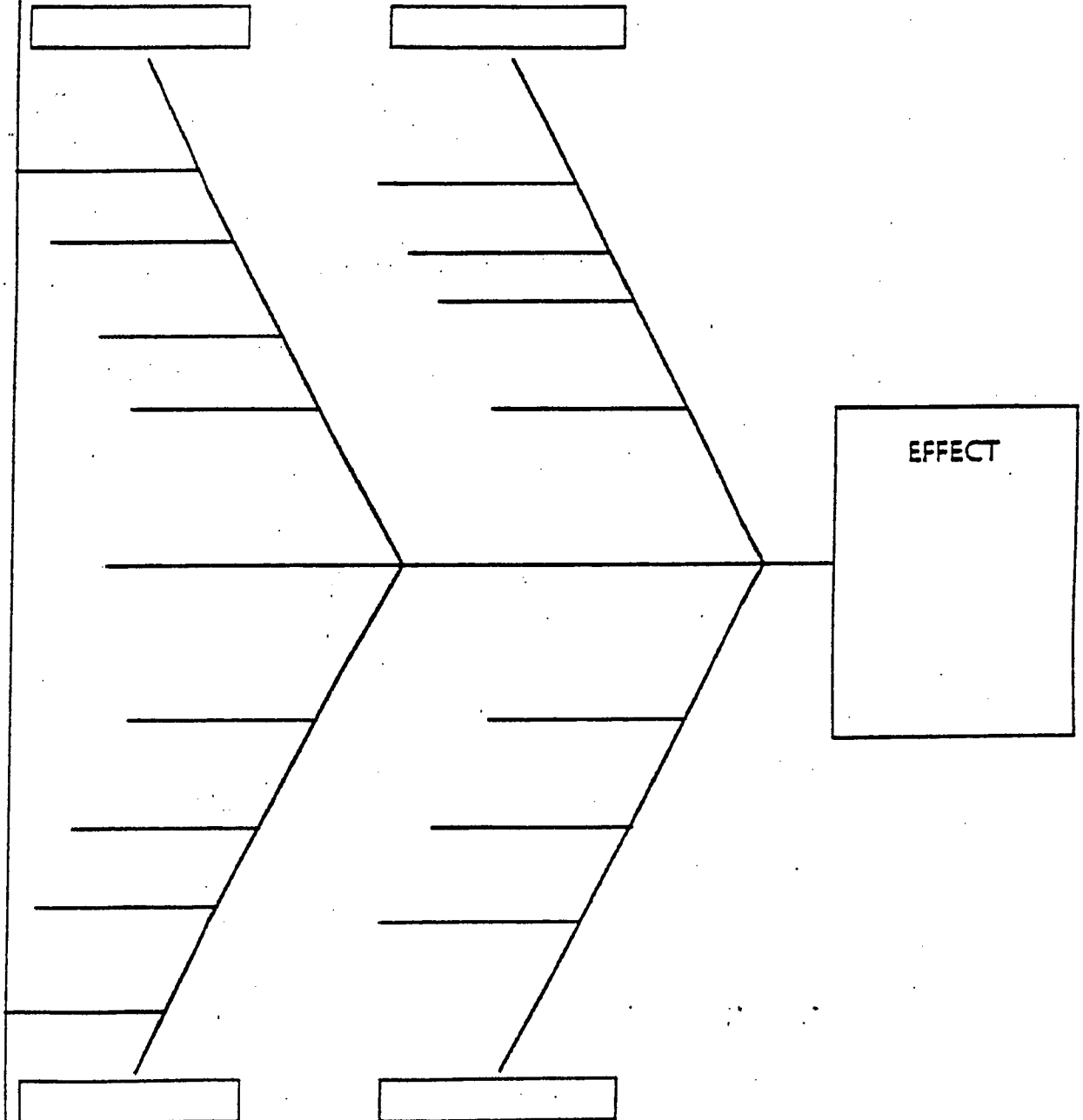
OPEN COMPARE AND CONTRAST

HOW ALIKE?

HOW DIFFERENT?

WITH REGARD TO

PATTERNS OF SIGNIFICANT SIMILARITIES AND DIFFERENCES:

CONCLUSION OR INTERPRETATION:

SKILLFUL DECISION MAKING

OPTIONS
What can I do?

```
┌──────────────────────┬──────────────────────┐
│                      │                      │
│                      │                      │
│                      │                      │
│                      │                      │
└──────────────────────┴──────────────────────┘
```

OPTION CONSIDERED

CONSEQUENCES What will happen if you take this option?	SUPPORT Why do you think each consequence will occur?	VALUE How important is the consequence? Why?

Decision-Making Model

Problem	Goal(s)

Alternatives	Pros ⊕ & Cons ⊖
	⊕
	⊖
	⊕
	⊖
	⊕
	⊖
	⊕
	⊖

Decision(s)	Reason(s)

COMPARING AND CONTRASTING

Information B

Information A

Information B

Information A

Alike

Different
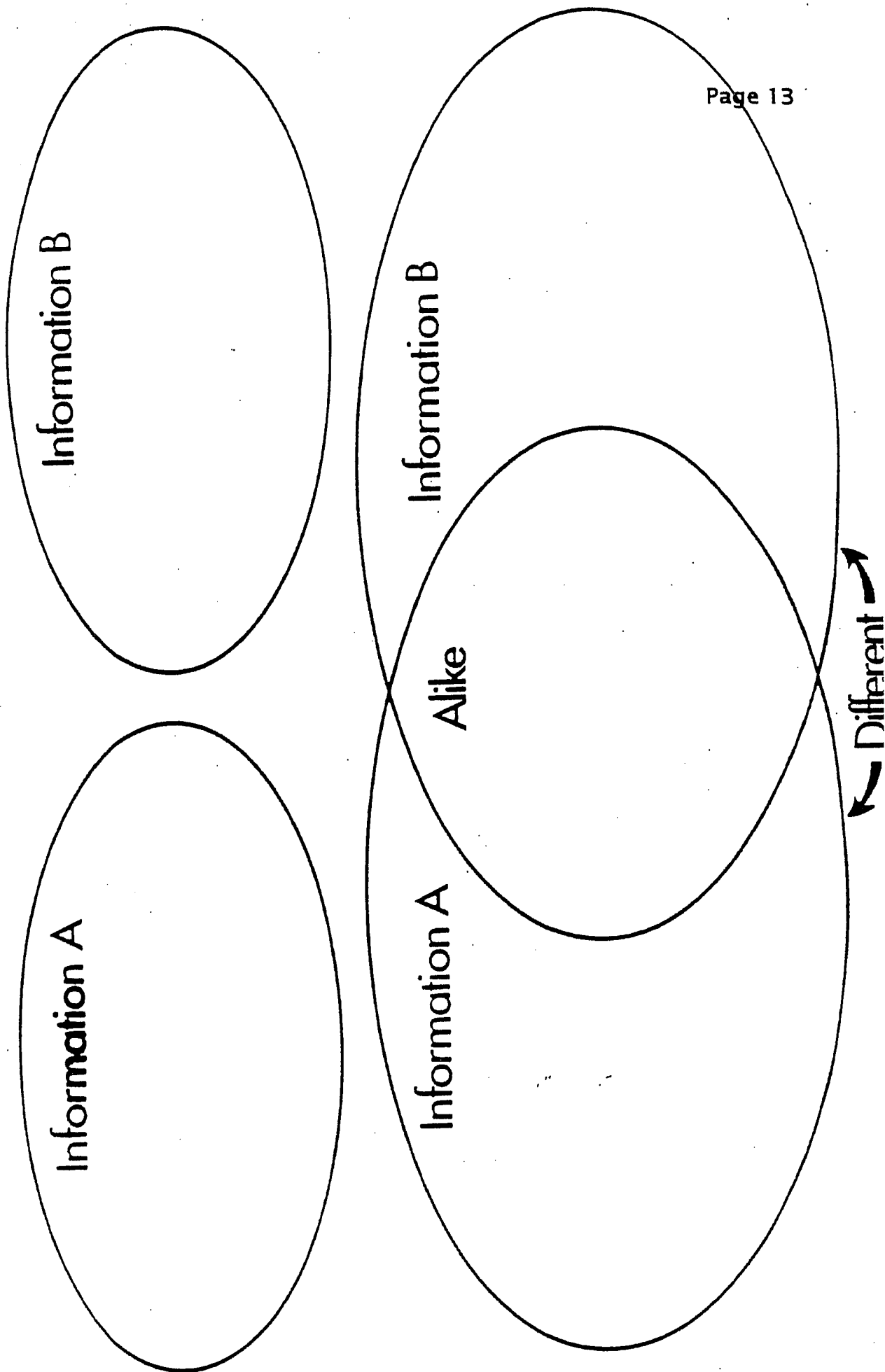
WEB DIAGRAM
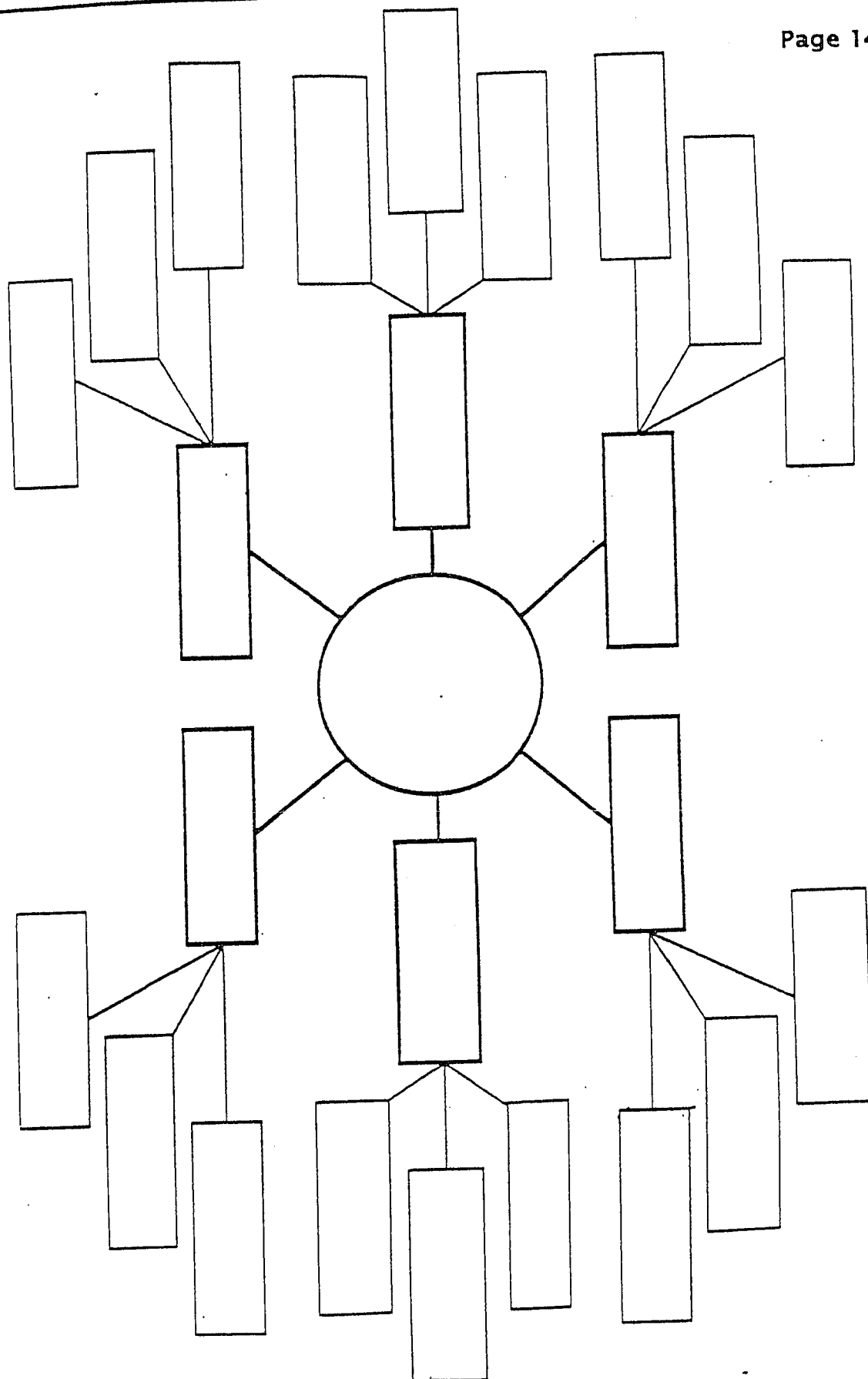
MAIN IDEA AND DETAILS

Main Idea

Detail

Detail

Detail

Stepladder Diagrams

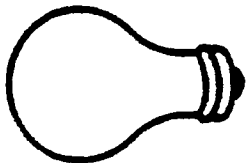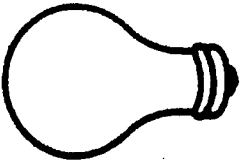Stepladder Diagrams are simple but effective graphic organizers for determining the priority order of a given set of events, ideas, processes, steps, or tasks. The Stepladder is a visual tool for students to use to rank options according to given criteria. To use it, give students a problem or situation that has several possible outcomes. Have the students generate a list of relevant criteria to use in ordering these potential outcomes and record their choices on the steps of the ladder with the best solution on the top rung of the ladder and the weakest solution on the bottom rung. It is important that students be able to defend their first choice with three to five reasons why it is better than the others. A Stepladder Diagram on "Making Paper" is included in the side column as an example.

5Ws and How Charts

Based on the work of newspaper reporters, this popular organizer provides students with a six-question format that helps them summarize important information on a given topic by asking *Who? What? When? Where? Why?* and *How?* This strategy is most effective when the topic is narrow and specific. To use this advanced organizer, ask students to draw a seven-row chart with *Who?* at the left of the first row, *What?* at the left of the second, and so on. In the last row of the chart, have students write *Summary Statement*; this is where they will write a detailed statement summarizing the major points from the information listed in the chart. Give the students a topic to research by finding the appropriate responses to the 5Ws and How and summarizing their ideas in one comprehensive statement at the bottom. An example of a 5Ws and How Chart on "Peoples of the Sahara Desert" is included on the next page.

SAMPLE STEPLADDER DIAGRAM ON MAKING PAPER IN FACTORIES CALLED PAPER MILLS

1. Logs are ground up and mixed with water to make pulp.

2. Pulp is then bleached white and additives, like glue, are mixed in.

3. Next, pulp is spread out on a belt of wire mesh.

4. Water is sucked away through holes in mesh and pulp forms sheet of paper.

5. Paper goes through rollers to dry it and smooth its surface.

6. Different kinds of paper, like tissue paper, wallpaper, and writing paper are made with different kinds of pulp.

Newspaper Model—5W Model

Topic:

Who	What	When	Where	Why

Write a paragraph using the information from this inverted pyramid form.

SAMPLE 5W AND HOW CHART

TOPIC: People Who Live In the Sahara Desert

Who: Three tribes live in the Sahara Desert: Moors live in the west, Tuaregs live in the central part. Tebus live in the east. Some are nomads.

What: Nomads travel to find food and water for their herds because animals quickly eat the few plants that exist in a desert pasture.

When: They keep traveling to find water. Sometimes they can find underground water called oases.

Where: The Sahara Desert is in Northern Africa. It is about the size of the U.S. and is very hot and dry.

Why: They must have water for themselves and their herds of animals, which are raised for meat and clothing.

How: Nomads carry their supplies on backs of camels because camels can carry heavy loads, can go without water for several days, and can live for long periods of time on fat stored in their humps. They also provide meat, milk, and hides for tents.

Summary Statement: Nomads live in the Sahara Desert and move from place to place to find water and food for themselves and their animals. They depend on the camel for transportation, food, and shelter.
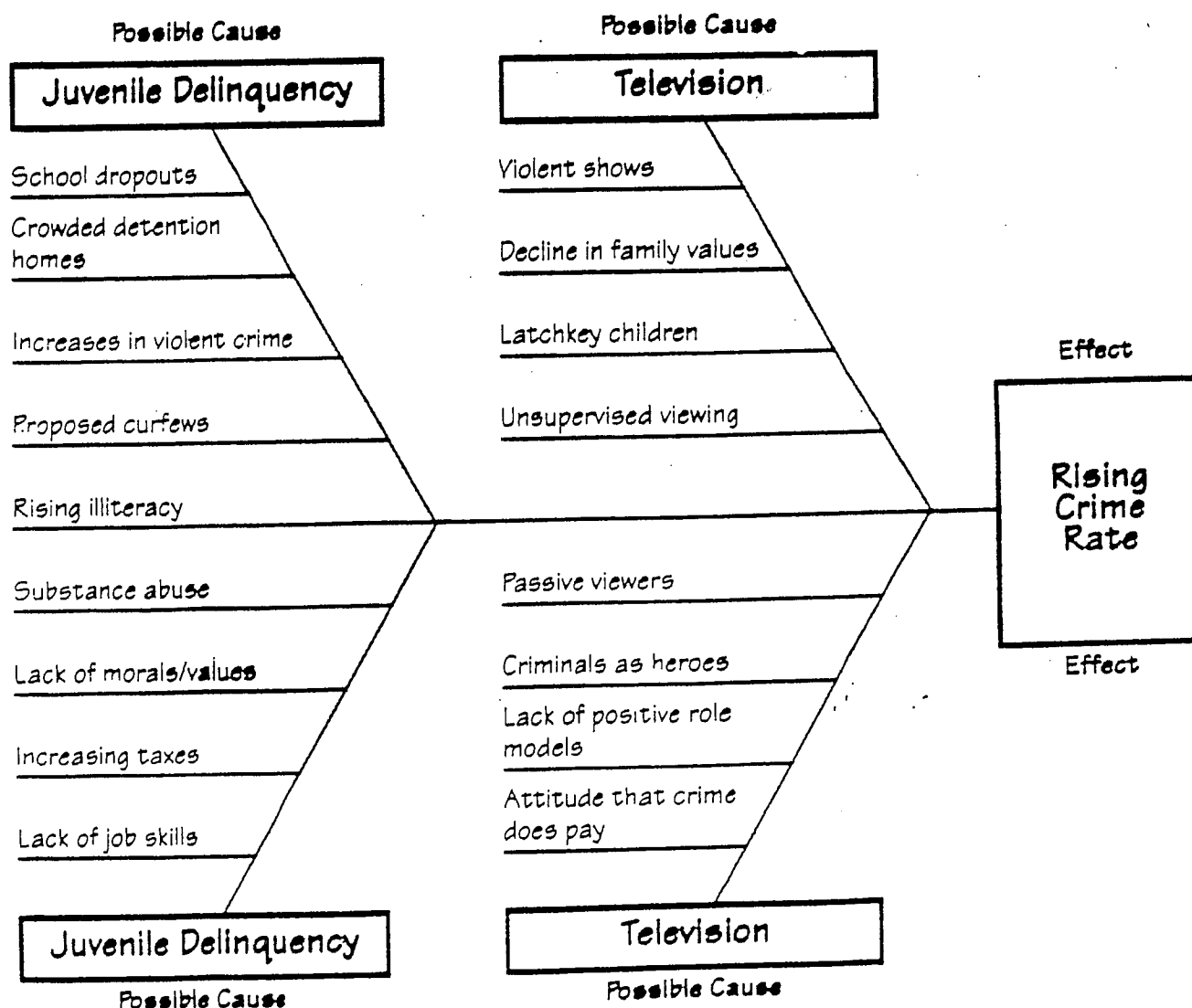
5W Model

TOPIC: _____

Who:

What:

When:

Where:

Why:

How:

Summary Statement:
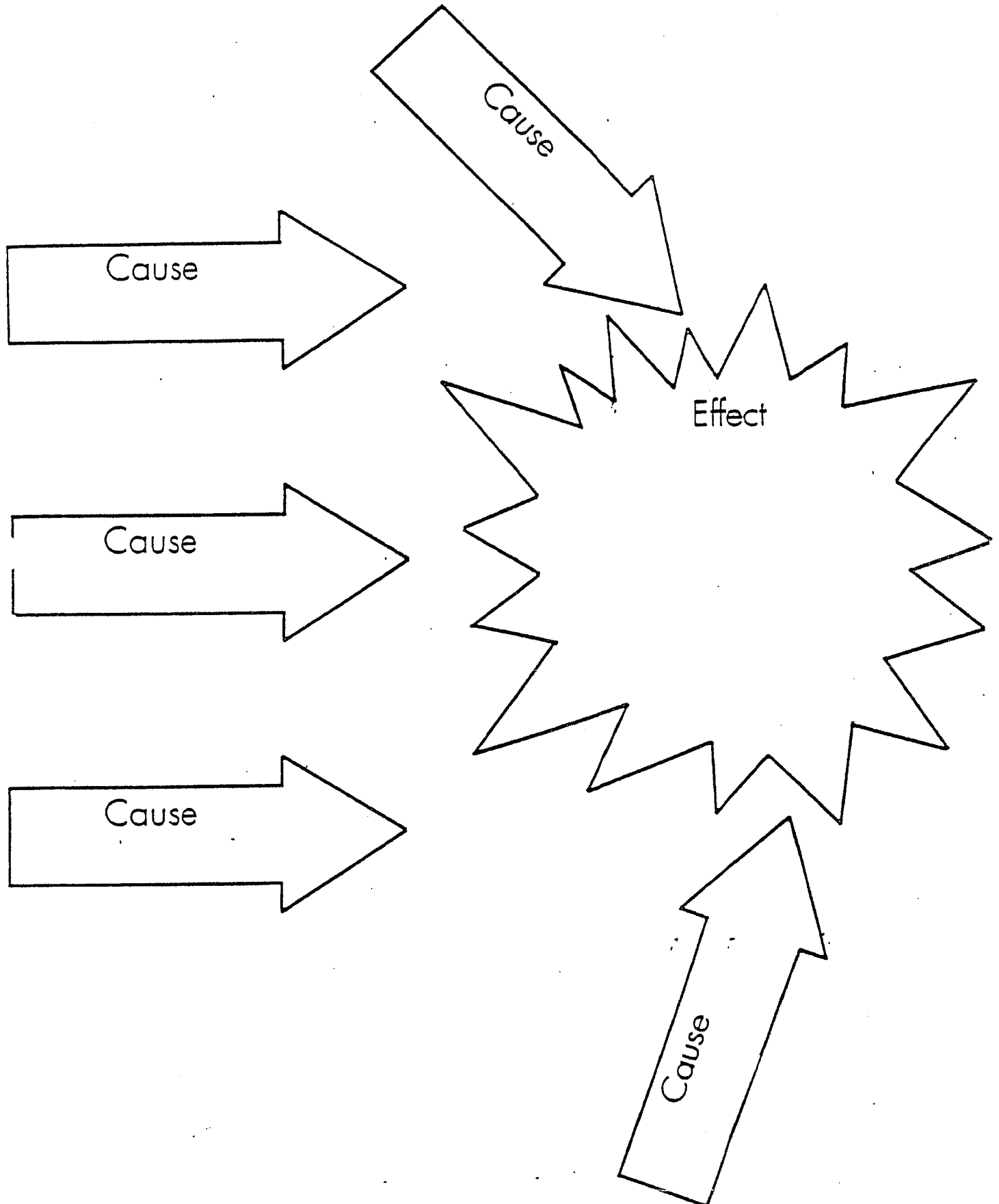
Fish Bone Diagrams

The Fish Bone Diagram is an graphic organizer often used for problem solving in business. It is particularly helpful in analyzing changes, conflicts, and cause-and-effect situations. First, identify the effect to be studied and the related category names to be analyzed as part of that effect. The effect is written on the head of the fish and the category names serving as clues to the effect are written at the ends of each major bone. Students brainstorm and discuss ideas about the possible causes of the problem, and these are recorded on the smaller bones under the most appropriate category name. Students then deliberate the varied causes, order them by rank, and decide on the most rational conclusion. A Fish Bone Diagram for "Rising Crime Rate" is shown below as an example.

SAMPLE FISH BONE MODEL ON RISING CRIME RATE

Possible Cause

Possible Cause

Juvenile Delinquency

Television

School dropouts

Violent shows

Crowded detention homes

Decline in family values

Increases in violent crime

Latchkey children

Proposed curfews

Unsupervised viewing

Effect

Rising illiteracy

Substance abuse

Passive viewers

Rising Crime Rate

Lack of morals/values

Criminals as heroes

Effect

Increasing taxes

Lack of positive role models

Lack of job skills

Attitude that crime does pay

Juvenile Delinquency

Television

Possible Cause

Possible Cause

Cause

Cause

Cause

Cause

Cause

Effect

CAUSE

CAUSE

EVENT

CAUSE

CAUSE

Name _____

Date _____

MATRIX

SIDE CATEGORY \ TOP CATEGORY			

MATRIX (example)

COUNTRY \ GLOBAL ISSUE	ENVIRONMENTAL CONCERN	HUMAN RIGHTS	CULTURAL DIVERSITY
MEXICO	Air Polution	Homelessness	Indians
INDIA	Food Supply	Overcrowded Conditions	Religion
CANADA	Deforestation	Socialized Medicine	French/English

MIDDLE SCHOOL
MIND MAP

- military
- political
- leaders
- mythology
- gods & goddesses
- religion
- rocky
- geography
- penninsula
- Parthenon
- architecture
- temples
- FIFTH-CENTURY GREECE
- drama
- literature
- poetry
- men only
- government
- democracy
- sports
- Olympics
- marathon

The following strategies come from:

Strategic Learning in the Content Areas
Wisconsin Department Public Instruction
Madison, Wisconsin 53707

Selecting/Organizing Strategies Page 24

Structured Notetaking

Description

Structured notes are graphic organizers that reflect the text structure the author used or the structure the reader inferred.

Readers who generate structured notes use common text structures as an organizing framework for their notes. They organize their notes around main ideas and the relationships of those main ideas to important details. This notetaking system contrasts with a simple listing of ideas in the order in which they appear in the reading.

Procedure

Step 1: Discuss with students notetaking techniques and problems that they may have in taking notes. Point out that many students have difficulty taking notes, such as trouble in deciding what to include or how to organize notes. Tell students that they will be learning a strategy that may help them take notes.

Step 2: Introduce one text structure strategy (begin with time/order) and show examples of that structure in simple, short passages of text from a content-area textbook. Select passages that clearly exemplify and signal the structure, and point out the cue words and phrases that signal the structure.

Step 3: Present the graphic organizer (see Chapter 4) for that structure. Guide students by

- telling them how the organizer represents the structure pictorially and
- entering main ideas and details from the passage onto the organizer to complete it.

Explain that they soon will be creating their own notes in this form, not just filling in already existing notes.

Step 4: Repeat the process with two more structures. Indicate differences between structures. Guide students to

- identify these three structures in simple, clearly signaled, short prose segments and
- draw graphic organizers, and enter main idea and detail phrases on them.

Provide feedback, encourage students to tell why they identified a segment as representing that structure and why they included particular information on the organizer.

Step 5: Repeat Step 4 with the remaining structures. Review all the structures and provide additional practice identifying the structure in passages in which the structure is merely implicit (e.g., without cues in introduction, headings, or transitions).

Step 6: Use an explicitly structured passage approximately five to ten paragraphs long from a content-area textbook. Model the notetaking strategy using a read/think-aloud procedure (Flower and Hayes, 1981). Explain the purpose for reading the passage and scan it. Comment whenever the overall structure becomes evident. Use the structure to predict subsequent content and rectify misconceptions that arise as you encounter new information. Continuously scan ahead and back to check on ideas that support the structure.

Create a structure-based graphic organizer, filling in main idea and detail information, fleshing out the graphic summary by referring back to text, and adding pictorial cues to represent main idea or important detail information. When filling in the organizer, paraphrase rather than using the text verbatim.

Step 7: Provide one explicitly structured and one implicitly structured three-to five-paragraph expository passage. Ask students to pair up and practice the notetaking strategy using the read/think-aloud procedure, starting with the explicitly cued passage. One student reads the passage aloud and takes notes, describing his/her mental processes orally. The partner provides feedback and encouragement. Then students switch roles and work with the implicitly cued passage.

Step 8: Introduce a full chapter of expository material that has explicitly cued, clear combinations of structures. It may be necessary to revise existing materials to have such a clean-cut example. Model the notetaking strategy using the read/think-aloud technique. Create a graphic organizer that encompasses the combinations of structures included in the chapter. Point out that there is no single correct form of organizer, but that the organizer that is developed should present the top-level structure as well as the other structures used in the passage.

Step 9: Provide students with a chapter of explicitly cued and cleanly structured expository material that they have not encountered previously. In pairs, have them generate a graphic organizer. Collect and review the structured notes that they produce and choose 2 or 3 to discuss and evaluate in a subsequent lesson. In the discussion, provide feedback on selection of structures, page layout, and selection of main ideas and details included on the organizer. Next, have students complete a similar activity independently.

Step 10: Model the read/think-aloud procedure using the notetaking strategy with implicitly structured and poorly organized materials. Show students alternative structures that might be used in creating graphic organizers and discuss how alternate structures emphasize different points. Have students practice the notetaking strategy with implicitly cued and poorly organized chapter-length materials.

Reference

Smith, Pat, and Gail Tompkins. "Structured Notetaking: A New Strategy for Content Area Readers." *Journal of Reading* (October 1988), pp. 46-53.

Central Idea Graphic Organizers

Description

Finding the central idea of a reading selection can be very difficult for many students. This strategy gives students a graphic format to organize their thoughts while looking for the main idea. It also lets students practice generating, rather than merely recognizing, a main idea from a reading selection. The graphic formats also serve to call attention to the text frames being used in the selection.

Generating the central idea can be either a during- or after-reading strategy. When using this strategy, it is important to teach students to differentiate between topics and main ideas. Explain that a topic is what the selection or paragraph is about and can be stated in one to three words. The main idea is what the author says about the topic and is stated in a sentence; it can be directly stated or inferred.

The reading task is more difficult when the main ideas are not explicitly stated in the material. Teachers should model this strategy first using material that has well-defined main ideas, then move on to paragraphs with inferred main ideas, and finally, show students paragraphs that don't have main ideas. Students should realize that text is not always written as explicitly as they may want it to be.

Procedure

Step 1: Ask the students to predict the topic of the entire selection from the title, its headings, illustrations, etc.

Step 2: After the students read the first paragraph, instruct them to decide on the topic and write it in the appropriate box in the graphic organizer.

Step 3: Ask the students to write on their graphic organizer what they learned about the topic. List the details in the appropriate boxes.

Step 4: Ask the students to state in a complete sentence, "What is the main thing the author says about the topic?" Instruct them to write it down in the appropriate box.

Step 5: The students should then check to see if all or most of the details connect with the main idea statement. If they don't, the student needs to get another main idea. If they do connect, move on to the next paragraph.

Reference

Caldwell, Jo Ann. From a course entitled "Strategies for Independent Reading." Cardinal Stritch College, Milwaukee, Wisconsin, March 1988.

Descriptive Organizer

Topic

Details

Main Idea Sentence

Problem/Solution Organizer

Topic

Problem   **Solution**

Main Idea Sentence

Sequential Organizer

Topic

Sequence

1. →	2. →	3. →	4. →	5. →	6. →

Main Idea Sentence

Compare/Contrast Organizer

Topic

Compare   Contrast

Main Idea Sentence

Mapping

Description

Mapping, a learning strategy that leads students to see connections between information or concepts, organizes words, ideas, or concepts in categories and shows how words relate to one another or how they go together. These maps (sometimes referred to as a mind maps or webs) help students link their prior knowledge to new ideas or vocabulary.
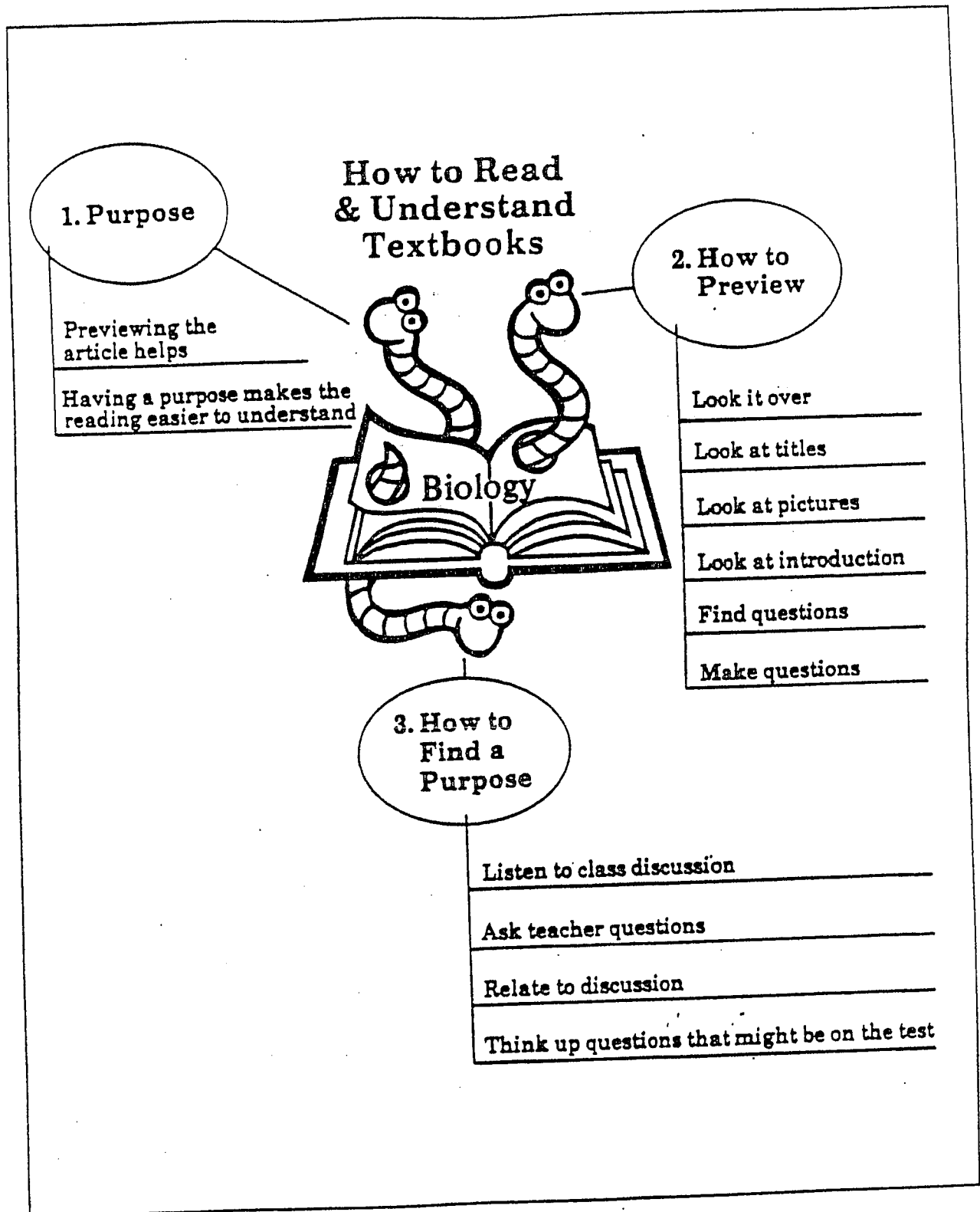
The center of the map contains the key word or concept, which is contained in either a geometric figure, such as a circle or square, or some sort of pictorial representation of the word or concept. Emanating from the central word or concept are the connecting links drawn in the form of lines or arrows. The related words or information are then written on these connecting lines. As the map grows outward from the center, the words or information become more specific and detailed.

While the mapping strategy can be used before, during, or after students read a selection, it is especially successful before reading to develop vocabulary. A vocabulary map builds students' backgrounds of important concepts by linking a key word or words with related words with which students are familiar. For example, before students read a rather difficult content selection containing a great deal of information and new vocabulary, a map could be constructed on the chalk board. This map also could serve as a graphic advance organizer, and as students read, the prior networking of new ideas would help them process the text more efficiently. The map helps students get the information "straight" and enables them to see how it fits together.
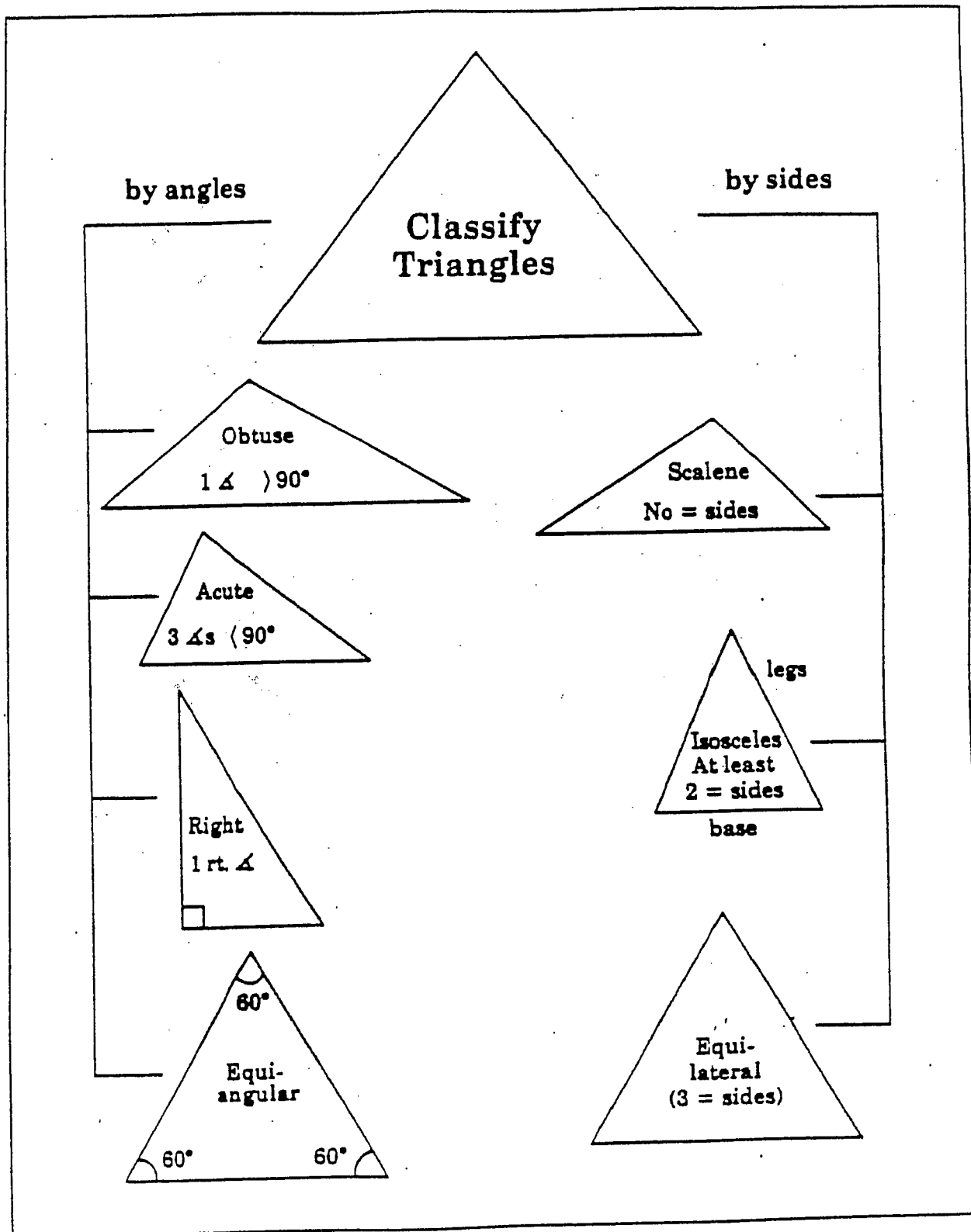
Maps help students organize concepts and focus on key words and supporting ideas. Through brainstorming with maps, the teacher can determine students' prior knowledge and can build on that knowledge. Creating a map also prompts students to become active participants in the classroom.

Procedure

Step 1: Select a key word or concept from the selection the students will be reading. Write it in the center on the board, on an overhead transparency, or on a piece of paper, and circle it.

Step 2: Brainstorm with the students about what they already know about this concept, and have them hypothesize what the basic categories of information will be in the reading passage.

Step 3: Guide students to survey the reading, and check the accuracy of their predictions. Write the categories on the map and connect them with lines to the concept in the center. Students should do the same with the individual maps they create.

Step 4: Guide students to read the text and complete their maps by adding information to each category. You may instruct students to read the text in parts, stopping after each section to place the relevant information on their maps. Students then review the section to check if they missed any important information and to add it to their maps.

Step 5: Be creative. Encourage students to use words, pictures, phrases, circles, rectangles, colors, or anything else that may help them portray the concepts as they create their maps.

Step 6: Discuss the ideas contained in the student maps. Have the students use their maps to review for a quiz or test, to write a summary of the material, or for some other activity that involves applying and extending the concepts from the text.

Example 1

Page 30

"Bookworm" Map

How to Read & Understand Textbooks

1. Purpose

Previewing the article helps

Having a purpose makes the reading easier to understand

2. How to Preview

Look it over

Look at titles

Look at pictures

Look at introduction

Find questions

Make questions

Biology

3. How to Find a Purpose

Listen to class discussion

Ask teacher questions

Relate to discussion

Think up questions that might be on the test

Example 2
Page 31

"Classifying Triangles" Map

by angles

by sides

Classify Triangles

Obtuse

1 ∠) 90°

Scalene

No = sides

Acute

3 ∠s (90°

legs

Isosceles
At least
2 = sides

base

Right

1 rt. ∠

60°

Equi-
angular

60°   60°

Equi-
lateral
(3 = sides)

Example 3   Page 32

Social Studies Map

Plight of Farmers in 1880s

1. Technology
- Reaper Invented
- Machines Very Expensive
- More Acres Planted
- Grow Only a Single Crop

2. Overproduction
- Surpluses Kept Prices Down
- Production Costs Greater Than Profit
- Droughts and Floods

3. Burden of Debt
- Mortgaged Their Land
- Debt to Railroads
- Deflation
- Became Tenants and Sharecroppers

4. Flight from the Land
- Farms Failed
- Bank Foreclosures
- Many Left the Land

Graphic Outlining

Description

Graphic outlining helps students and teachers read and understand content-area texts. The outlining procedures consist of five basic steps: survey, represent, read with comprehension monitoring, outline, and summarize.

Graphic outlining is a way of representing the information in a text so that the structure of the text is highlighted. By creating graphic representations, the students predict what is likely to be important and organize the information they are learning. Graphic outlines are created to match the various organizational frames authors use in their writing (see Chapter 4). For example, by creating a compare/contrast graphic representation, the students determine which similarities and differences are likely to be important in a particular selection. As they read, the students select and organize information based on these similarities and differences. The graphic outline guides this comprehension process.

Procedure

Step 1: Survey
Model a survey of the selection. As part of this survey, students should

- examine the title, headings, graphics, and summary;
- look for clues as to the organization of the text; and
- ask questions, such as: How is the information structured? What do the questions seem to indicate as important information? Does the author compare or contrast two or more concepts? Is the text an explanation? Is there a cause-and-effect relationship indicated?

Step 2: Represent
Model the formation of hypotheses about the text's overall structure. Guide students as they determine the following:

- What frame questions seem most appropriate?
- What graphic structure would represent the structure most effectively?

During this step, the possible graphic outlines are simply predictions. If the students have a relatively clear picture of the overall structure, they may want to make simple drawings to use as a study aid. However, if the structure is unclear, it may not yet be possible to construct a graphic representation.

Step 3: Read with Comprehension Monitoring
Guide students as they read the selection using their tentative graphic outline. As part of this process, direct students to

- fill in gaps for understanding;
- look for ideas/areas not yet represented in the graphic;

- clarify any points raised during the reading by guiding students to reflect on their understanding of the reading; and
- check the graphic outline to see if it illustrates the important ideas and relationships of the reading.

Step 4: Outline
Model the completion of the graphic outline representations. Provide them with the sample graphic outlines as guides.

Step 5: Summary
Model the use of graphic outlines for writing summaries. Guide students through the process.

Example: Social Studies

The following example describes how a graphic outline might be applied to a third-grade social studies class. Their assignment is to read the chapter entitled "Cities as Communities."

Survey

The students look at the title, "Cities as Communities," and at the title page's pictures of New York City, Washington, D.C., and the interior of a garment factory. On succeeding pages are maps of the East Coast and of New York City. There also are pictures of children playing in a park and eight scenes in New York City. Students also look at the questions after each chapter subsection (e.g., "What are the five parts of New York City called?" "What is an apartment house?").

As students look for clues as to the organization of the text, they ask themselves questions such as how the information is structured, whether two or more concepts are being compared, and whether the text is an explanation.

Represent

The students form hypotheses about the text structure. In this case, the information seems to be simply an explanation of New York City. Thus, the first graphic representation is a spider map with New York City in the center. Its "location" and the "five parts" are subtopics. The students begin drawing a spider map.
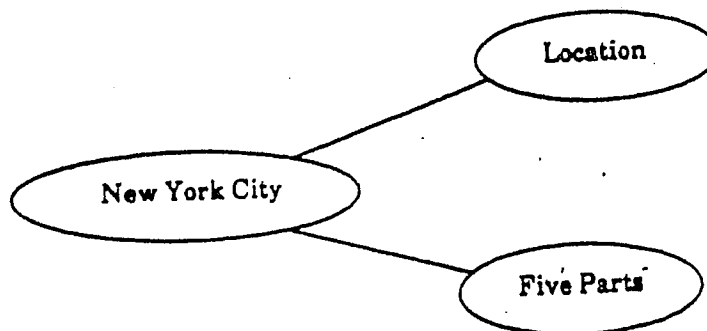
Read with Comprehension Monitoring

While the students read, they find the five boroughs of New York City, and they add them to the spider map. They also add subtopics related to downtown New York City and its neighborhoods.
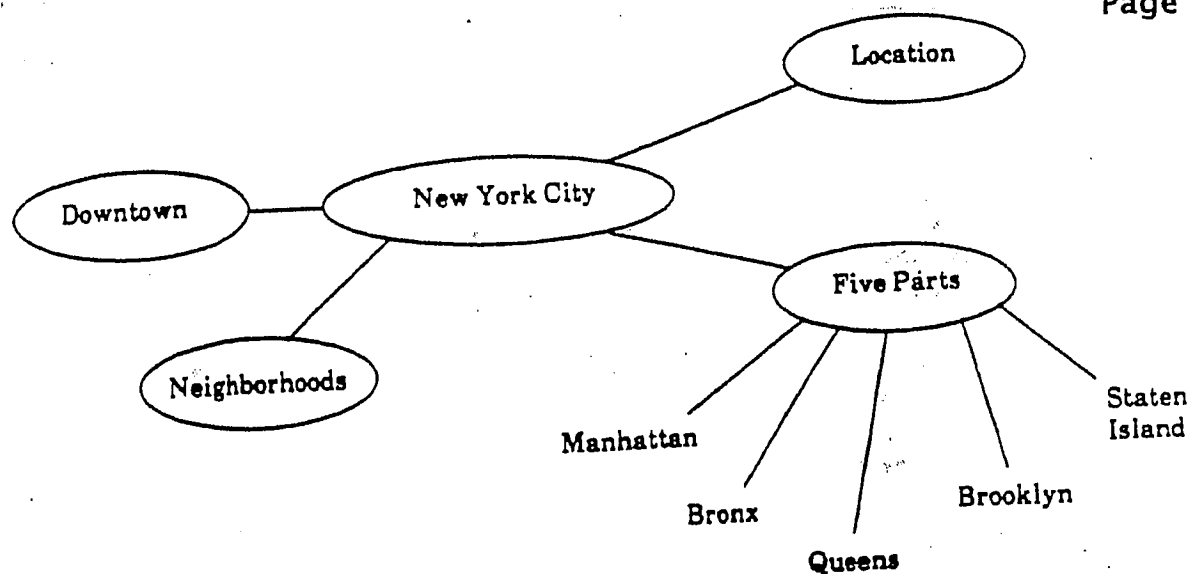
When they finish reading they reflect on whether the spider map shows the important structure of the chapter. They decide that it does, although they wonder if downtown and the neighborhoods are being compared.

Outline

Students complete the graphic outline. In this case, it is a spider map.

Summarize

The students write a summary to include the information from the chapter. They use the spider to help them write the summary.

Reference

Jones, B. F. "SPaRCS." In *Strategies for Teaching Reading as Thinking, A Teleconference Resource Guide.* Elmhurst, IL: North Central Regional Education Laboratory, 1988.

Analogy Graphic Organizer

Description

Analogies, an especially effective means to link familiar concepts with new information, are one option to many other strategies designed to help students examine the multiple meanings of words and concepts. This strategy also helps students broaden their understanding of key vocabulary or concepts as it introduces students to a new perspective or new relationship. Students must analyze simple to complex relationships between facts or concepts and use higher-level thinking skills as they comprehend the significance of the analogy.

Analogies are helpful when teachers

- activate background knowledge
- introduce new concepts
- explain ideas or describing relationships of facts
- show similarities between very different ideas
- strive to build student vocabulary knowledge

The basic structure of an analogy is the "relationship sentence" or question. Teachers should model the background or "hidden" thinking that is involved as a student strives to understand or write an analogy.

Students may not recognize how analogies can aid their understanding as they read or study. Teachers need specifically to point out any analogies in a text so that students will be aware of the function of analogies and their relationship to comprehension of content-area concepts.

There are many types of analogies. Some may highlight characteristics. For example,

"That car is a real dinosaur!"
"It's as hard as a rock."
"How is your nervous system like a telephone network?"
"How were the early French explorers like you on your first day of school?"

Some analogies highlight functions or help students relate new information to background knowledge (relating the "new to the known").

"Gills are related to fish as lungs are related to people."
"The propeller on a plane is like the flapping wings of an eagle."

Teachers can use analogies to introduce new topics and to evaluate student understanding of important concepts. Analogies also challenge student thinking. For instance, ask students to complete the following analogy:

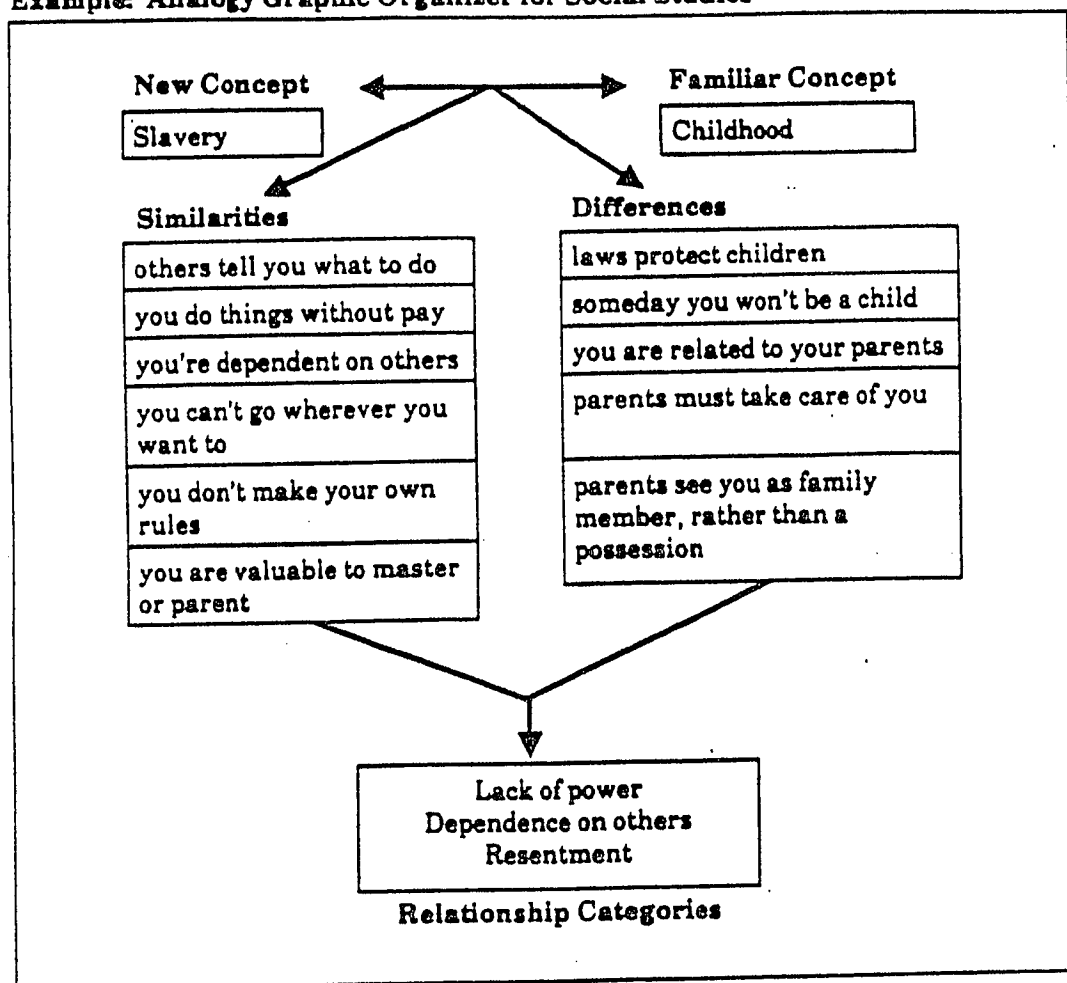"The cell is to the body as _____ are to a house." (Answer: bricks)

Step 1. Determine what students know about possible analogous relationships involving the concept being introduced. Select one familiar concept to help the students develop an analogous relationship to the new concept.

Step 2. Use a compare/contrast graphic organizer with students to explore analogous as well as non-analogous characteristics of the two concepts. It may be necessary at this stage to brainstorm with students about specific characteristics or properties that may be common between the two concepts. Initially, this step is teacher directed using the graphic organizer on an overhead or chalkboard. As students develop more independence, individual copies of the graphic may be given to students for completion as a small group or individual exercise.

Sample Analogy Graphic Organizer
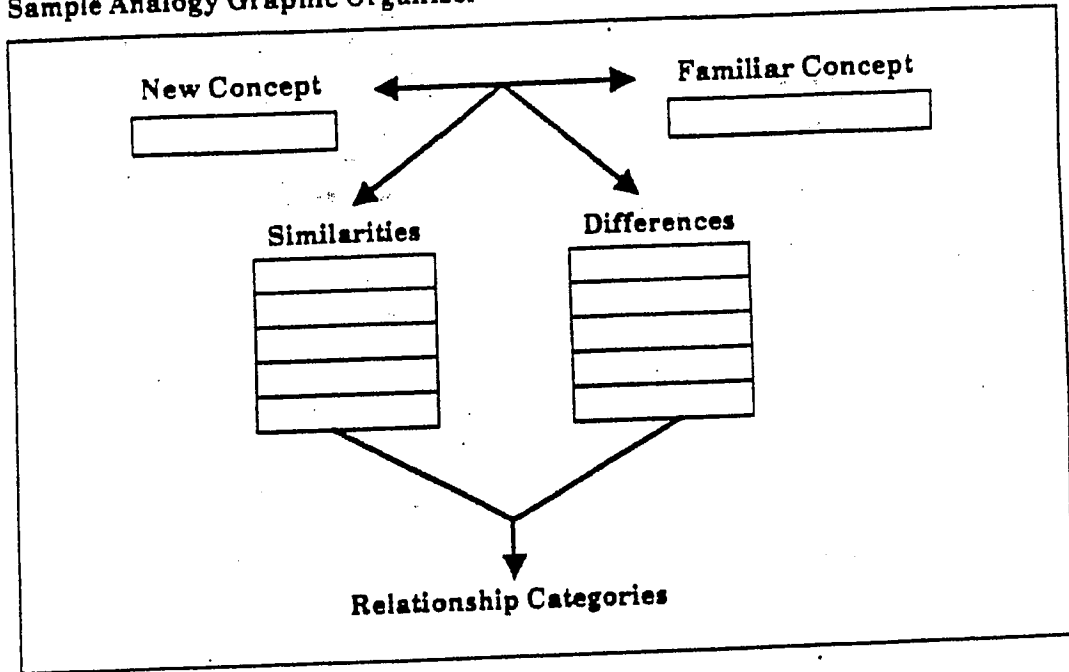
Step 3. Identify similarities and differences in the graphic organizer. Discuss with students the categories that make up the basis for the relationship. For example, when comparing volcanoes to popcorn, students will discover that their responses may be categorized as resulting from both heat and pressure. When comparing Ghandi with Martin Luther King Jr., students may observe that the categories representing the relationship categories are people's rights and methods of political activism.

Step 4. Relate the new concept to another familiar concept. Students should be guided in constructing their own analogies using these categories of relationships. This can be an effective way to encourage students to further explore and apply the key relationships to new situations. For example, when students discover that heat and pressure can cause an explosion, they could construct the following analogy: "Heat and pressure is to a volcano as a microwave oven is to a potato." Another example might be: "Ghandi was to Indian self-determination as Susan B. Anthony was to women's suffrage."

Example: Analogy Graphic Organizer for Social Studies

New Concept

Slavery

Familiar Concept

Childhood

Similarities

| others tell you what to do |
| you do things without pay |
| you're dependent on others |
| you can't go wherever you want to |
| you don't make your own rules |
| you are valuable to master or parent |

Differences

| laws protect children |
| someday you won't be a child |
| you are related to your parents |
| parents must take care of you |
| parents see you as family member, rather than a possession |

Lack of power
Dependence on others
Resentment

Relationship Categories

Reference

"Analogy Graphic Organizer." Based on unpublished work of Doug Buehl and Diane Hein, Madison (Wisconsin) Metropolitan School District, 1988.